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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,740	12/11/2003	Chung Shih	68936.001093	9514

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HUNTON & WILLIAMS LLP
INTELLECTUAL PROPERTY DEPARTMENT
1900 K STREET, N.W.
SUITE 1200
WASHINGTON, DC 20006-1109

EXAMINER	
FUBARA, BLESSING M	

ART UNIT	PAPER NUMBER
1618	

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06/12/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/734,740	SHIH ET AL.	
	Examiner	Art Unit	
	BLESSING M. FUBARA	1618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Examiner acknowledges receipt of request for extension of time, power of attorney, amendment, remarks and terminal disclaimer filed 02/06/08. Claims 1, 2, 4, 5, 8, 10. 12, 16, 18, 19, 23, 25, 29, 31, 34, 36, 39 and 41-43 are amended. Claims 1-43 are pending.

Response to Arguments

Previous rejections that are not reiterated herein are withdrawn.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-43 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rathi et al. (US 6,004,573).

Rathi discloses a water-soluble biodegradable ABA-type block copolymer drug delivery system having a gelation temperature at or below the body temperature (abstract, column 4, lines 57-65 and column 5, line 5), that is at body temperature the formulation is liquid and flowable meeting the limitation that the polymer solution is flowable at body temperature. Specifically Table 1 describes the behavior of the PLGA-PEG-PLGA tri-block polymer to gel above the gelation temperature. Rathi discloses an average molecular weight ranging between from about 3,100 and about 4,500 for the block copolymer (abstract; Table 1; claims 1, 5, 12, 18) meeting

the molecular weight requirements of claims 1, 4, 8, 12, 18, 23, 29, 34 and 39; the block copolymer having about 51-83% by weight of hydrophobic A polymer block and about 17-49% by weight of hydrophilic B polymer block (abstract; column 5, lines 6-8) meeting claims 1, 4, 8, 12, 18, 23, 29, 34 and 39; the A block polymer consists of poly (lactide-co-glycolide) and the B block consists of polyethylene glycol (PEG) or polyethylene oxide (PEO) or polyoxyethylene; the lactate or lactide content of the A block is between about 65 and 85 mole percent and the glycolate or glycolide content in the A block is between about 15 and 35 mole percent (column 5, lines 4-16) meeting claims 3, 6, 11, 17, 20, 32, 37 and 42. The A polymer block of Rathi is made from lactide and glycolide monomers (example 1), which meets the scope of claims 1, 2, 5, 10, 12, 16, 17, 18, 19, 23, 25, 29, 31, 34, 36, 39 and 41. "Free flowing liquid at body temperatures" recited in claims 1, 4, 8, 12, 18, 23, 29, 34 and 39 is the property of the formulation/composition. "Capable of solubilizing" as recited in the claims is the intended use of the composition. Claims 5, 10, 16 are product by process claims. Rathi teaches the method of claims 18 and 23 by providing the biodegradable polymer and parenterally administering the formulation the formulation (abstract, column 4, lines 63-65; column 5, lines 21-23). The method of claims 34 and 39 is the preparation of the polymer formulation and Rathi as described above and in Examples 6, 7 and 80

Rathi made the observation that ABA-type block copolymers that have hydrophobic A block copolymer content of between about 51-83% by weight and ABA block copolymer having a molecular weight of between about 3,100 and 4,500 are soluble in water at low temperatures and undergo reversible thermal gelation at mammalian physiological body temperatures (column 6, lines 32-40). Rathi specifically discloses that the ABA-type block polymer composition gels

at body temperature, which is 37 °C (abstract and column 1, lines 19-21) and this means that between 35 °C and 36.999 °C, the ABA-type polymeric composition of Rathi is a liquid. Rathi discloses that the concentration of the soluble block copolymer at below the gelation temperature is the functional concentration which ranges from 3% to 50% (column 9, lines 55-65) and the concentration of the block copolymer is related to the sol-gel phase transition of the polymer as a function of temperature (column 9, lines 63-67 and Figure 1).

The biodegradable drug delivery system of Rathi is an aqueous solution of the ABA block copolymer and dissolved drug or drug as a suspension or emulsion, the drug delivery system is administered parenterally, topically, transdermally or inserted into ocular, vaginal, rectal, nasal, oral and transurethral cavities; the drug makes up between 0.01 to 20% by weight of the of the drug delivery formulation (column 10, lines 19-65 and claims 12-18) and parenteral means intramuscular, intraperitoneal, intra-abdominal, subcutaneous, intravenous and intra-arterial (column 5, lines 22-24). Rathi specifically teaches a method of administering a drug to a warm blooded animal in a liquid form below the gelation temperature (claim 1) and in Rathi the gelation temperature is the physiological temperature of the warm blooded animal, which is 37 °C (abstract), since the instant method of claims 18 and 23 administer instant composition to warm blooded animals, the method of Rathi meets the scope of the instant method claims 18 and 23.

Rathi specifically teaches that the block copolymer increases solubility and chemical stability of many drugs (column 10, line 66 to column 11, line 28) and polyols including sugars, amino acids, surfactants, polymers, proteins and certain salts can be incorporated into the block

copolymer as additives (column 12, lines 4-11) and amino acids and certain salts can be buffer. Thus the composition of Rathi comprises excipients meeting the scope of instant claim 13.

The instant invention is directed to block copolymeric composition comprising block copolymeric carrier and a drug with the proviso that when the copolymer is an aqueous solution, the copolymeric composition is a liquid at temperatures at body temperatures. The instant polymeric composition encompasses the polymeric composition of Rathi in light of the discussion following.

The functional concentration of the biodegradable copolymer in instant claims 9, 14, 24, 30, 35 and 40 is between 1-50%. In Rathi, the functional concentration of the biodegradable copolymer is from about 3% to about 50%, which lies within the instant range of 1-50% and because Rathi's functional concentration is a narrower range or species of the instant range, Rathi's functional concentration meets the scope of the instant functional concentration range. The lactide or lactic acid content of the A block ranges from 20 to 100 mole percent and the glycolide or glycolic acid ranges from 0 to 80 mole percent in instant claims 3, 6, 11, 17, 20 and 26. The lactate or lactide content is between about 65 to 85 mole percent and glycolate or glycolide content is between 15 and 35 mole percent in the A block in Rathi and these ranges lie within the instant ranges. Thus Rathi's ranges in the content of lactate or lactide and glycolate or glycolide meet the scope of the instant ranges. The method of administering in the prior art meets the scope of the administration method of instant claims 18, 22, 23 and 28. Regarding claims 7, 15, 21 and 27, the instant drug content of 10^{-6} to 100% encompasses the narrower drug content range of 0.01 to 20% or the preferred range of 0.01% to 10% disclosed in Rathi, and Rathi meets the scope of the instant drug content.

Rathi in column 12, line 66 to column 13 line 10 exemplifies a specific ABA block copolymer that comprises 75% by weight hydrophobic A block of PLGA and 25% by weight hydrophilic B block of PEG, ABA block copolymer that has an average molecular weight of 4000, 75% mole percent lactate or lactide and 25 mole percent glycolate or glycolide. Although Rathi teaches the preparation of the above specific PLGA-PEG-PLGA tri-block copolymer, Rathi broadly discloses block copolymer having about 51-83% by weight of hydrophobic A polymer block and about 17-49% by weight hydrophilic B polymer block.

Since the hydrophobic A polymer block in Rathi ranges from 51-83% and the hydrophilic B polymer block ranges from 17-49% and since these ranges are covered in the ranges of the instant A and B block, there are points within those ranges where the percent amounts of the A and B blocks of the instant claims and the prior art are the same. This is true also for the mole percent of the lactide and glycolide, for the molecular weight of the block copolymer and for the drug content in the polymeric composition. Thus, at those points when they are the same the polymeric compositions of the prior art and the invention are the same and thus the properties would be the same. Thus, the polymeric compositions of the invention and the prior art would have the same property. Specifically, the gelation properties of both composition would be the same and there is nothing in the instant claims that indicates that the properties are not. It appears that there is an aspect of applicants' invention that allows the composition to remain liquid at above body temperature and applicants have not communicated that in the claims. Thus Rathi anticipates the scope of the instant claims. In the alternative, since the claimed composition and the method (claims 18, 23, 29, 34 and 39 read on the composition and the methods of Rathi, it flows that the properties of flowable liquid at body temperature would be

inherent to both the claimed and prior art disclosed so that it would be obvious that same compositions would exhibit same properties. In the absence of factual evidence, the properties of the claimed composition being flowable at body temperature would not render the claimed invention patentable over a prior art product that is the same as that which is claimed.

Response to Arguments

3. Applicant's arguments filed 02/06/08 have been fully considered but they are not persuasive.

4. Applicant argues that that the claimed invention requires that when the "polymeric composition" is formed "as an aqueous polymer solution" it is a liquid at body temperatures," and that the examiner has not provided technical reasoning as to why the examiner relied on inherent characteristics. The technical reasoning was based on the claimed product/composition comprising elements i) and ii) and a characterization that "when the polymeric composition when formed as an aqueous polymer solution, is free flowing at body temperature" with this characterization representing what the polymer would do when it is put in solution. Now, the polymer product of Rathi have the % amount of the hydrophobic and the hydrophilic blocks touching points within the recited percent ranges as described in the rejections of record. Further, the %concentration of the polymer of Rathi also touches points within the recited concentration. Thus, from the teaching of the prior art it is clear that the polymer composition of the prior art is essentially the same as the polymer composition of the prior art. MPEP 2112.01 [R-3] II states "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or

claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

5. Applicant argues that the office action concludes that the polymer composition of Rathi is flowable at body temperatures while Rathi's composition actually forms a gel at body temperatures and that figure 1 shows gel formation at 20 °C, that the gel of Rathi cannot be free flowing upon injection if it were to act as controlled release gel. The examiner disagrees on the following grounds. a) the claim only says body temperature which is very broad because it is known that the body temperature is variable, for example it is evidence by the following references that the body temperature can range from 35 °C to up to 45 °C so that a broad recitation of body temperature without qualifying what the temperature would be encompasses all the variations of temperature; US 4,829,262 at column 1, lines 36-39 indicate body temperature to start at 35 °C; US 5,279,288 disclose body temperature to range from 35 °C to 38 °C (column 10, lines 15 and 16); US 5,339,821 disclose body temperature to range form 35 °C to 45 °C (column 7, line 7); US 6,920,248 disclose body temperature to be typically from 35 °C to 37 °C (column 10, lines 35 and 36); and US 2003/0050243 discloses body temperatures at 36. 7 °C, 36.8 °C, 36.9 °C, 37.1 °C, 37.0 °C and 36.6 °C (Tables 1 and 2). Thus the composition of Rathi is a liquid at temperatures at less than 37 °C as suggested by Rathi at column 1, lines 19-21. Further also, the recitation that the composition is free flowing at body temperature is a characteristic of the polymer and when the polymer is in aqueous medium, the polymer is capable of exhibiting that characteristic. Therefore, the office action did use conclusory reasoning in the rejections. Applicant may agree with the examiner that what the examiner has to work with is the claims and the prior art. "When the PTO shows a sound basis for believing

that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Applicant has not provided such a factual showing. The data on Fig. 1 is one embodiment --- it is clear from column 1, lines 19-21 that 37 ^{o}C as suggested/anticipated.

6. Applicant says that none of the compositions of Rathi teach a polymeric composition that when form as an aqueous polymer solution is free flowing, but "when form" is a step of putting the polymer in the future that has not been performed such that "when" the polymer composition is placed in aqueous solution, it would also be capable of exhibiting that characteristics.

7. Applicant argues that none of the compositions meet the limitations of the claims as it regards the claimed polymer molecular weight of 1500 to 3099, but Rathi specifically discloses a molecular weight of between about 3100 and 4500 (abstract; column 5, line 6 and column 6, line 37; about 3100 has points at less than 3100. Thus there is a clear disclosure for less than 3100 that would meet a molecular weight of 3099 (0.999 =99.9% of 3100 is 3096).

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re*

Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1-43 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-77 of U.S. Patent No. 6201072 respectively. An obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but an examined application claim not is patentably distinct from the reference claim(s) because the examined claim is either anticipated, or would have been obvious, over the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985). Although the conflicting claims are not identical, they are not patentably distinct from each other because the prior issued patents use and make the same formulation.

Response to Arguments

10. Applicant's arguments filed 02/06/08 have been fully considered but they are not persuasive.

11. Applicant argues that the office action failed to articulate why the claims of 6,201,072 would render obvious the examined claims and that 6,201,072 claims priority to the Rathi reference and that the Rathi does not teach composition that would flow at body temperature and that likewise the claims of 6,201,072 does not recite a composition that flows at body

temperature. This is not found persuasive. Rathi is discussed extensively above and the response provided above in incorporated herein. In the same way the composition of the issued claims have the same composition and the flowability characteristic is inherent as discussed above. Specifically points within the recited molecular weight of 2000-4990 in issued claim 1 touches points within the recited molecular weight range of at least examined claim 1.

12. The examiner thanks the applicant for filing the disclaimer over the 6,592,899.

No claim is allowed.

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BLESSING M. FUBARA whose telephone number is (571)272-0594. The examiner can normally be reached on Monday-Friday from 7:30 am to 3:30 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Hartley, can be reached on (571) 272-0616. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-8253.

/Michael G. Hartley/
Supervisory Patent Examiner, Art Unit 1618

/Blessing M. Fubara/
Examiner, Art Unit 1618